

## NOTES ON GEOGRAPHIC DISTRIBUTION

### Reptilia, Squamata, Gymnophthalmidae, *Riama balneator* and *Riama vespertina*: Distribution extension, Ecuador.

Juan Pablo Reyes-Puig<sup>1, 2</sup>  
Marco Altamirano B.<sup>2</sup>  
Mario H. Yáñez-Muñoz<sup>2</sup>

<sup>1</sup> Fundación Oscar Efrén Reyes. Calle 12 de Noviembre 240 y Calle Luis A. Martínez.  
Baños, Tungurahua, Ecuador. E-mail: foer2005@yahoo.com

<sup>2</sup> Museo Ecuatoriano de Ciencias Naturales, Departamento de Vertebrados, División de Herpetología.  
Calle Rumipamba 341 y Shyris. Quito, Ecuador.

The lizard genus *Riama* includes 25 species distributed through the central Andes of Peru, Ecuador, Colombia, the *Cordillera de la Costa* in Venezuela, and extending into the Caribbean island of Trinidad (Doan and Castoe 2005; Rivas et al. 2005; Uetz 2008). Sixteen species of *Riama* (previously placed under the name *Proctoporus*, see Kizirian 1996; Doan and Castoe 2005) are known to occur in Ecuador and most of them are endemic to the Ecuadorian Andes and have restricted distributions, with the exception of *Riama simotera* that also occurs in Colombia (Kizirian 1996). *Riama* lizards are semi-fossorial and secretive organisms, consequently little is known about their natural history and conservation status.

Two species of *Riama* were recently collected during surveys conducted by the *División de Herpetología* of the *Museo Ecuatoriano de Ciencias Naturales*, Quito, Ecuador (DHMECN), in the central and southern Andes of Ecuador. Study of their morphology leads us to conclude that they represent *Riama balneator* and *R. vespertina*, both previously known only from their type series (two and one specimens respectively) and from single localities. Herein we present new distribution records, notes on morphological variation, color descriptions, and photographs in life of these little known Ecuadorian endemics.

#### *Riama balneator* Kizirian, 1996

Kizirian (1996) described this species based on two specimens collected in the Puela River valley (Pastaza river drainage), on the southern versant of Tungurahua volcano (01°32'01" S, 78°25'01" W;

2,750 m), province of Tungurahua in the central Ecuadorian Andes. Two specimens (DHMECN 04111-2) were collected in the San Antonio Mountains, on the eastern slope of the Tungurahua volcano (01°26'22" S, 78°24'39" W; 2,950 m), 10.5 km north of the type locality on 07 April 2007 by Juan Pablo Reyes-Puig, Nelson Palacios, and Salomón Ramírez. Two additional specimens were captured, but not collected, at the same locality on 06 September 2007. The collected specimens were found under the same fallen log in a pasture near secondary mountain forest. Sixteen eggs in different stages of development were found with the lizards, and presumably belong to the same species.

*Riama balneator* can be distinguished from similar species by the following characteristics (data by Kizirian 1996 followed by variation observed in DHMECN specimens in box brackets): (1) 21 scales between femoral pores in females; (2) complete superciliary series; (3) 4 or 5 supraoculars; (4) 3 or 4 postparietals; (5) keeled dorsal scales [striated or nearly smooth]; (6) 27–28 longitudinal dorsal scales rows [25–29]; (7) 42–43 transversal dorsal scales rows [36–43]; (8) 10 longitudinal ventral scales rows [11–13]; (9) 22 transversal ventral scales rows [23]; (10) 2 or 3 lateral scale rows; (11) 11 femoral pores in males [12] and 2 in females.

In life, dorsal colour pattern is primarily brown peppered with minute blackish spots. The dorsal surface of the head is dark brown. A dorsolateral dark-bordered pale stripe is distinct on the head and neck, is less distinct at mid body, and is

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weakly organized on the anterior portion of the tail. Approximately 12–14 faintly defined ocelli are present laterally from the neck to just before to hind limb. The ventral surfaces of the body are dark brown. Iridescent tones are

present everywhere. Males are darker than females, which also has reddish shades on the posteriors half of the body and cream shades on the edges of ventral scales (Figures 1 and 2).



**Figure 1.** Male of *Riama balneator* in life (DHMECN 4111) collected at San Antonio Mountains, eastern slope of the Tungurahua volcano, Ecuador, on 07 April 2007.

**Table 1.** Measurements of examined specimens of *Riama balneator*. SVL, snout-vent length; TL, tail length; RTPL, regenerated tail portion length.

Museum number	Sex	Measurements (mm)		
		SVL	TL	RTPL
DHMECN 4111	Male	60.0	46.0	0
DHMECN 4112	Female	61.0	37.0	11.0
Not collected	Male	64.0	104.0	0
Not collected	Female	64.6	74.2	0



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**Figure 2.** Female of *Riama balneator* in life (DHMECN 4112) collected at San Antonio Mountains, eastern slope of the Tungurahua volcano, Ecuador, on 07 April 2007.

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### *Riama vespertina* Kizirian, 1996

This species was previously known from one specimen collected in Pampa Chitoqué, 4.5 km south of Vicentino, Cordillera de Celica, (03°59'55" S, 79°55'54" W; 1,828 m), in the province of Loja on the western slopes of the southern Andes of Ecuador. This *Riama* species occurs farther south and west than any other Ecuadorian congeneric taxon (Kizirian 1996). Two specimens were collected at *Reserva Biológica Utuana* (04°22'02" S, 79°42'02" W; 2,600 m), 48.3 km southeast to the type locality on 12 December 2006 by Marco Altamirano B., Mario Yáñez-Muñoz, Andrés Laguna, and Christian Coloma (DHMECN 4113-4). The specimens, male

and female, were collected under fallen logs and amidst the litter on the forest floor. The female (DHMECN 4114) contained two eggs (length 6.1 mm, width 3.7 and 4.1 mm).

*Riama vespertina* can be distinguished from similar species by the following characteristics (data by Kizirian 1996 followed by variation observed in DHMECN specimens in box brackets): (1) 9 scales between femoral pores in females (6); (2) superciliary series incomplete, two anteriors and one posterior, interrupted by the second supraocular; (3) 3 supraoculars [3 or 4]; (4) 2 postparietals; (5) dorsal scales keeled or

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striated; (6) 22 longitudinal dorsal scales rows [19–21]; (7) 34 transversal dorsal scales rows [32–35]; (8) 10 longitudinal ventral scales rows [8–10]; (9) 20 transversal ventral scales rows [20–22]; (10) 2 lateral scale rows [1 or 2]; (11) 5 femoral pores in males [10] and 8 in females.

In life, *Riama vespertina* is dark brown with light copper dorsolateral stripes that extends from the

neck to the middle body. Minute black marks are randomly arranged in the head and body. Small white marks are present below the eye and the upper labials. Ten distinct ocelli are present laterally from the neck to the hind limb. The ventral surfaces are reddish cream with brown marks. The male has darker and more distinctive ocelli than females (Figures 3 and 4).



**Figure 3.** Male of *Riama vespertina* in life (DHMECN 4113) collected at *Reserva Biológica Utuana*, Ecuador, on 12 December 2006.

**Table 2.** Measurements in examined specimens of *Riama vespertina*. SVL; snout-vent length; TL, tail length; RTPL, regenerated tail portion length.

Museum number	Sex	Measurements (mm)		
		SVL	TL	RTPL
DHMECN 4113	Male	56.0	91.0	0
DHMECN 4114	Female	61.0	47.0	28.0



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**Figure 4.** Female of *Riama vespertina* in life (DHMECN 4114) collected at *Reserva Biológica Utuana*, Ecuador, on 12 December 2006.

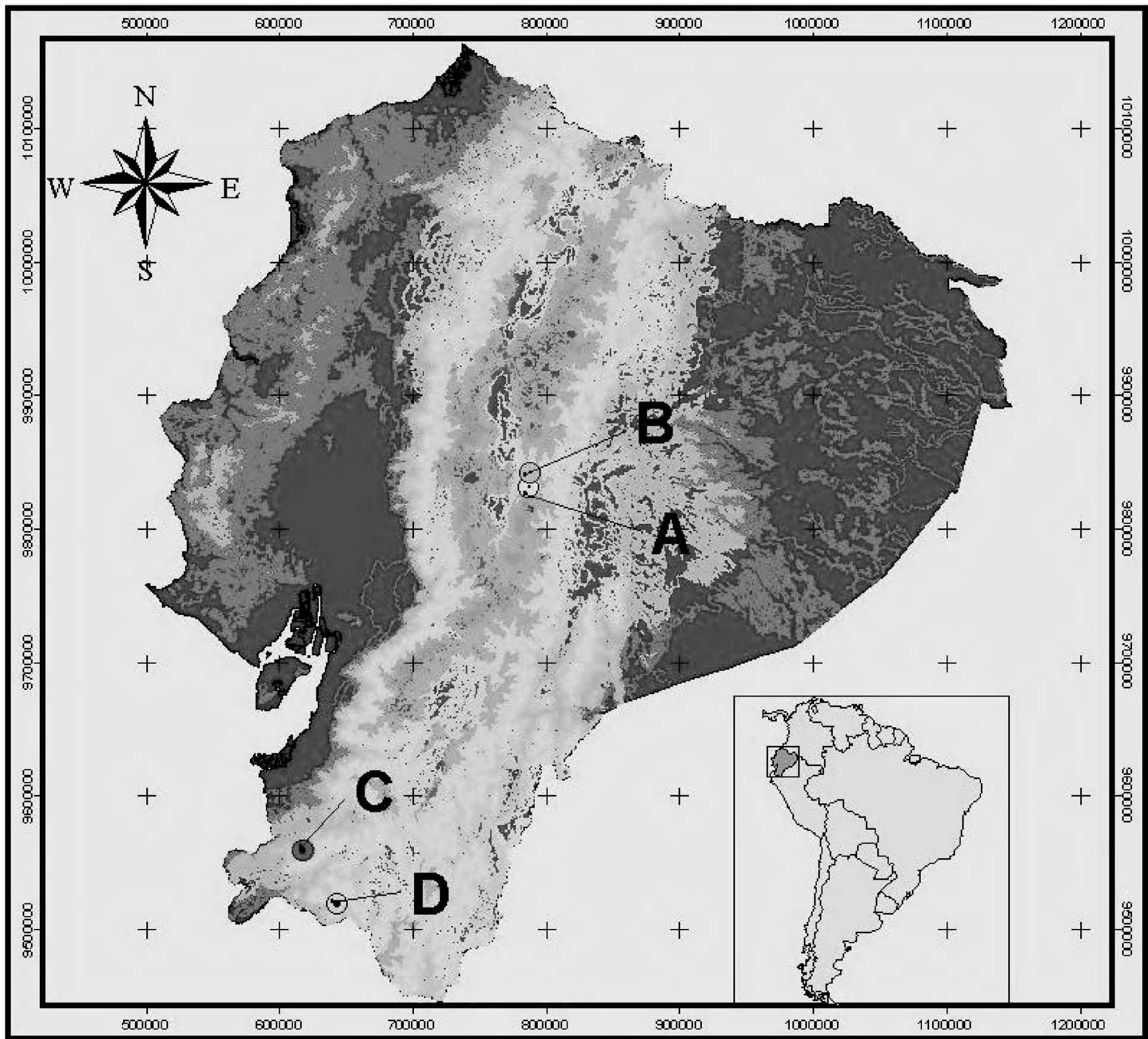
These new records of species of *Riama* represent a rediscovery of both species after 22 years in the case of *R. balneator* and 85 years in the case *R. vespertina*. *Riama balneator* is still known only from a restricted zone on the Tungurahua volcano. However a range extension of almost 50 km is reported for *R. vespertina*, but it is still endemic to the southwestern Andes of the province of Loja. Perhaps, the few records of these two species correspond to a lack of interest on these taxa and little research in their area of distribution.

The difference in femoral pore counts and altitudinal range between the type of *R. vespertina* and the new material might be significant, suggesting that the new material herein allocated to *R. vespertina* may represent an undescribed

species. However, more collected individuals and an evaluation of habitat continuity between the type locality and the new collecting localities is necessary before drawing additional conclusions.

Given the restricted distribution, less than 50 km, between the type locality and the locality of the new material allocated for both endemic species (Figure 5), rates and extent of habitat destruction in the Andes and specific volcanic pressures in Tungurahua volcano; these species might qualify as endangered (EN) or critically endangered (CR) according with threatened categories of UICN (2001), however deficient data (DD) is an adequate category until more surveys in the type localities and nearby areas have been conducted and more information about both species is obtained.

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**Figure 5.** Distribution records of two endemic species of *Riama* lizards in the Andes of Ecuador. *Riama balneator*: A, Puela River valley, type locality; B, San Antonio Mountains; both localities in the province of Tungurahua. *Riama vespertina*: C, Pampa de Chitoqué, type locality; D, *Reserva Biológica Utuana*; both localities in the province of Loja.

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